ARIZONA DEPARTMENT OF HEALTH SERVICES

BUREAU OF EMERGENCY MEDICAL SERVICES AND TRAUMA SYSTEM

PERFORMANCE IMPROVEMENT TOOLKIT:

STEMI

AZ-PIERS Q3 & Q4 2012

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Report No. 14-1-EMS

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Purpose:

The purpose of this report is to provide agencies with a baseline level of comparison on their performance during Q3 and Q4 2012 on STEMI calls. This report can be used to support Quality Assurance initiatives in their communities.

This report analyzes four STEMI related performance measures:

1. Reduce the length of time between arriving on scene and performing a 12 lead ECG reading;
2. Increase the number of hospital pre-notification for patients IF THEY HAVE a suspicious 12 lead ECG;
3. Increase the number of patients transported to cardiac receiving centers IF THEY HAVE a suspicious 12 lead ECG;
4. Increase the number of patients receiving pre-hospital aspirin and oxygen therapy IF THEY HAVE a suspicious 12 lead ECG;.

Methodology:

The Arizona Prehospital Information & EMS Registry System (AZ-PIERS) was analyzed to find records where a 12 lead ECG was performed and the results indicated a possible Myocardial Infarcation. The records in this analysis had:

1. A unit notified date range of July 1st, 2012 to December 31st, 2012; AND
2. An incident/patient disposition = Dead on scene, OR treated and transferred, OR treated and transported; AND
3. A procedure field of having a 12 lead ECG performed.

Limitations:

It is an extremely important to note the difference between suspected STEMIs in the pre-hospital environment and a confirmed STEMI at the hospital. This report describes the response of the an EMS agency to a suspected STEMI and their performance benchmarked against the state aggregate.

Additionally, state benchmarks are restricted to only include those agencies participating in the registry.

If your agency in not currently participating but would like to sign up please visit us on our AZ-PIERS homepage.

There was a total of 2,588 patients with matching the STEMI criteria. The median age of STEMI patients was 71 years with an equal distribution of males and females. Less than 1% of patients died on scene, 28% were treated and transferred for care, and 72% were treated and transported to a hospital.

Table 1: Demographics for STEMI patients

Event characteristics	N	%
Cohort (suspected 12-Lead ECG patients)	2,588	100.00%
Gender		
Female	1,286	49.69%
Male	1,302	50.30%
Patient Discharge Status		
*Missing	5	0.19%
Dead at Scene	3	0.11%
Treated and transferred	719	27.78%
Treated and transported	1,861	71.90%

Table 2: Distribution of ages for STEMI patients

	25th percentile	Median	75th percentile
Age (years)	56	71	81

EMS Agencies
Data Source: AZ-PIERS Q3 & Q4 2012
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Performance Measure 1: Reduce time to ECG

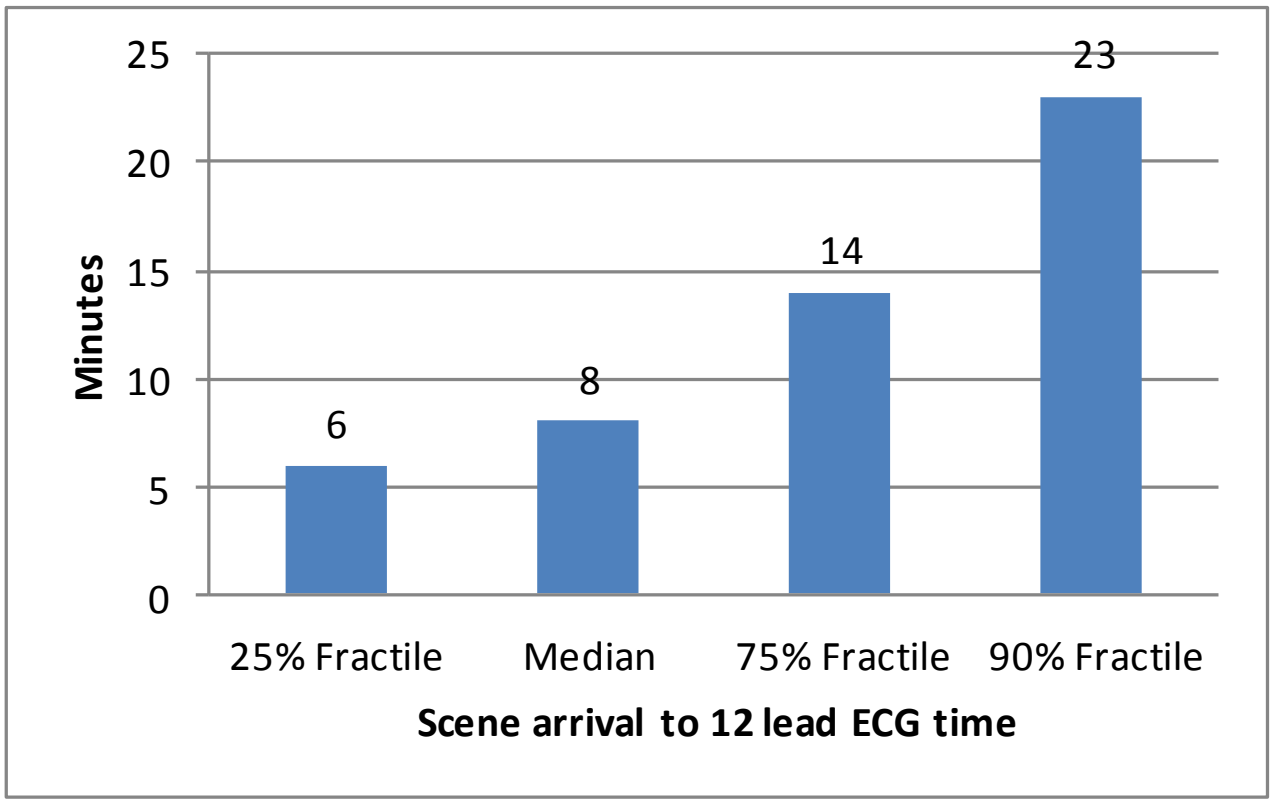

Table 3: Time distribution for suspected STEMI patients who received ECGs

	Not Documented	Count	Min	Max	25% Fractile	Median	75% Fractile	90% Fractile
Arrival to 12-lead ECG time (minutes)	28	2,560	0	1,447	6	8.0	14	23

The median time that it took a unit arriving on scene until the time they performed a 12 lead ECG was 8 minutes. In 90% of the cohort, a 12 lead ECG was performed with 23 minutes after arriving on scene. The 12 lead ECG time was missing in 28 records.

Performance Measure 2: Increase hospital notification of suspected STEMIs

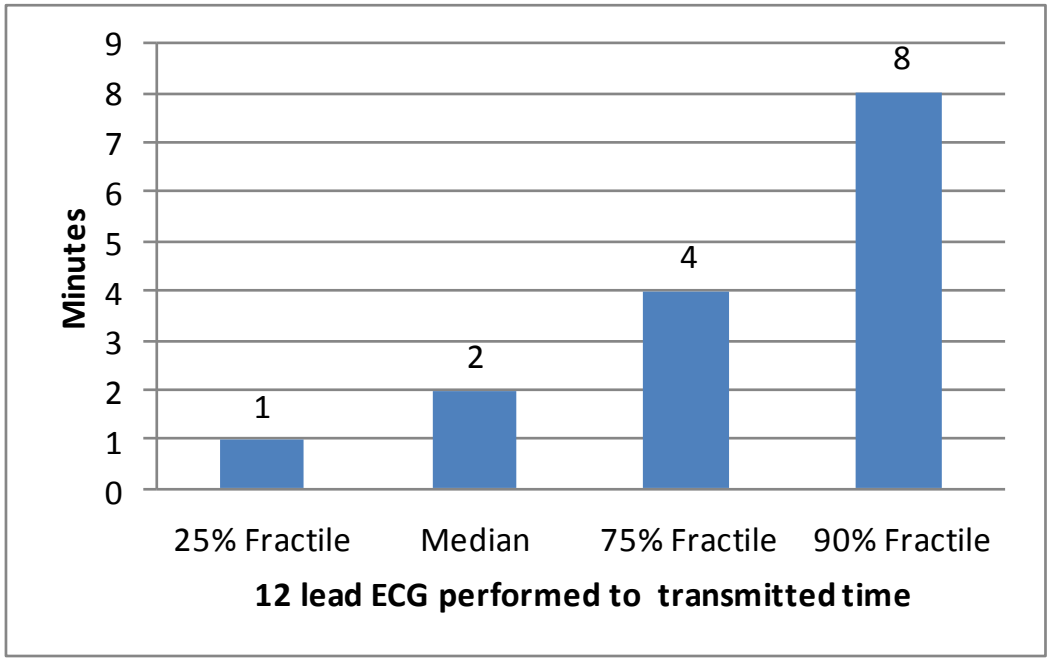

Table 4: Transmission time for ECGs to hospitals

	Not Documented	Count	Min	Max	25% Fractile	Median	75% Fractile	90% Fractile
12-lead to transmission (minutes)	2,528	60	0	13	1	2.0	4	8

A majority of 12 lead ECG transmissions times were missing as this is an optional data element. However, there were sixty records in which this element was available. The median time from the ECG being performed to the time it was transmitted to hospital was 2 minutes.

There should be a focus from agencies to collect and report this element as this greatly impacts patient care.

EMS Agencies
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Performance Measure 3: Have STEMIs treated at CRC

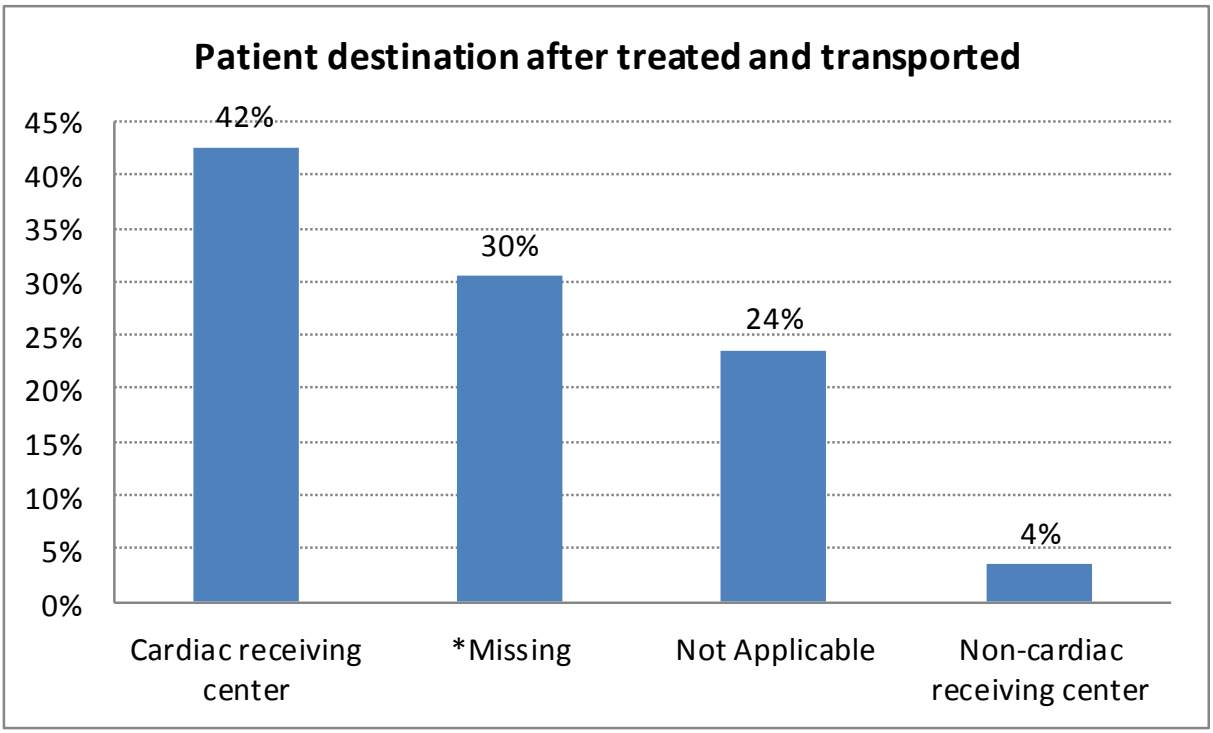


Table 5: Patient transport locations for suspected STEMI patients

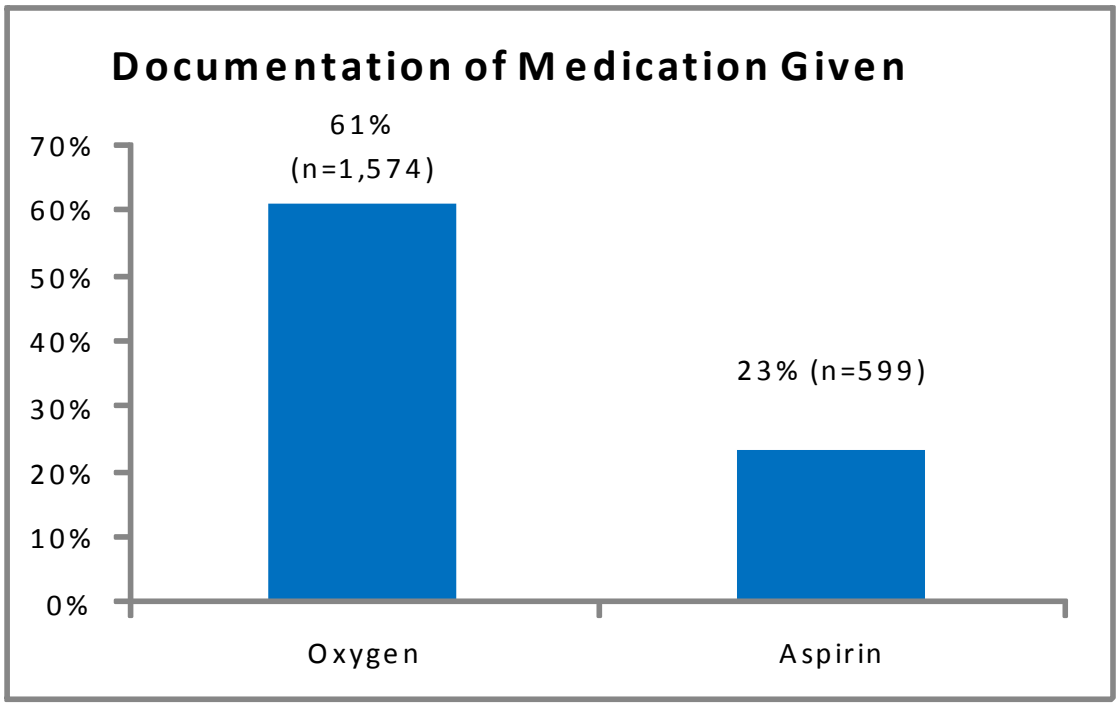
	N	%
Total treated and transported	1,866	100.00%
Patient transported to location		
Cardiac receiving center	791	42.39%
***Missing**	568	30.43%
Not Applicable	441	23.63%
Non-cardiac receiving center	66	3.53%

Patients that had 'Treated and Transported' were further analyzed.

Of these patient, 42% were transported to a Cardiac Receiving Centers (CRC). A large portion of records (1,009) had no destination hospital information available.

There should be a focus from agencies to collect and report this element as this greatly impacts patient care.

Performance Measure 4: Increase aspirin and oxygen administration for STEMIs



Sixty-one percent of the STEMI reported administration of oxygen, while 23% reported administering aspirin.

Table 5: Suspected STEMI patients receiving O_2 and aspirin

	N	%
Did STEMI patient receive oxygen?		
No	1,014	39.18%
Yes	1,574	60.81%
Did STEMI patient receive aspirin?		
No	1,989	76.85%
Yes	599	23.14%